

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-04-06T21:07:00.220  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 3379626962550751744  
 2Mass ID (if available) : 06462744+2323273

Uranus 2036-04-06T21:07:00 K14.27 G16.58 PgtRgt

ICRS Star Coord at Epoch: 06h 46m 27.44143s +23:23:27.20226s

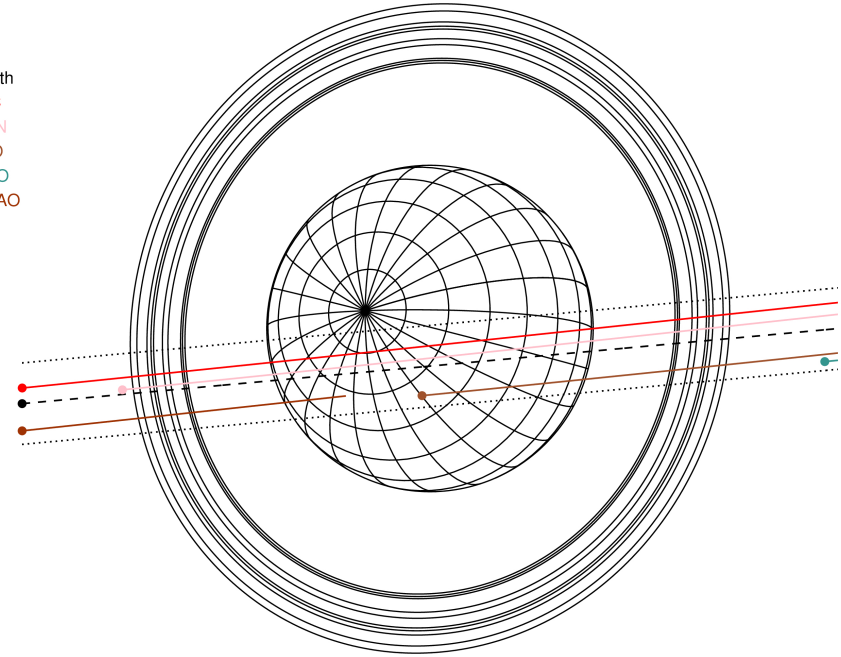
RUWE (>1.4 is poor) : 1.01  
 K magnitude : 14.271  
 G magnitude : 16.579  
 RP magnitude : 15.867  
 BP magnitude : 17.140  
 DUPflag : 0  
 Distance (au) : 18.897  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 9.80  
 Sun-Target sep (deg) : 83.51  
 Sun-Moon sep (deg) : 44.50  
 B (ring opening deg) : 65.68  
 PA of pole (deg) : 74.66

Uranus 2036-04-06T21:07:00 K14.27 G16.58  
 PgtRgt



2036-04-06T21:07:00.2200 a: 06 46 27.4414 s: +23 23 27.2022 C/A 0.418° PA 5.26 deg v\_sky + 9.80 km/s D 18.90 AU  
 Credit: Styled after SORA/Lucky Star

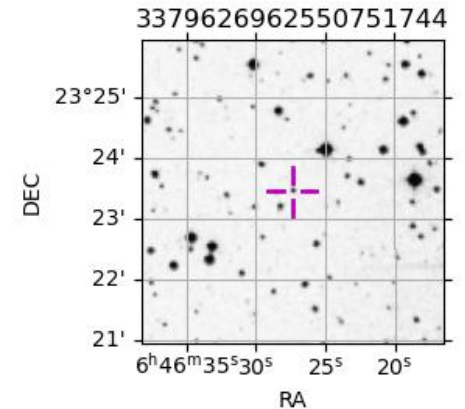
Earth  
 PIC  
 TEN  
 RIO  
 ESO  
 SAAO



#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

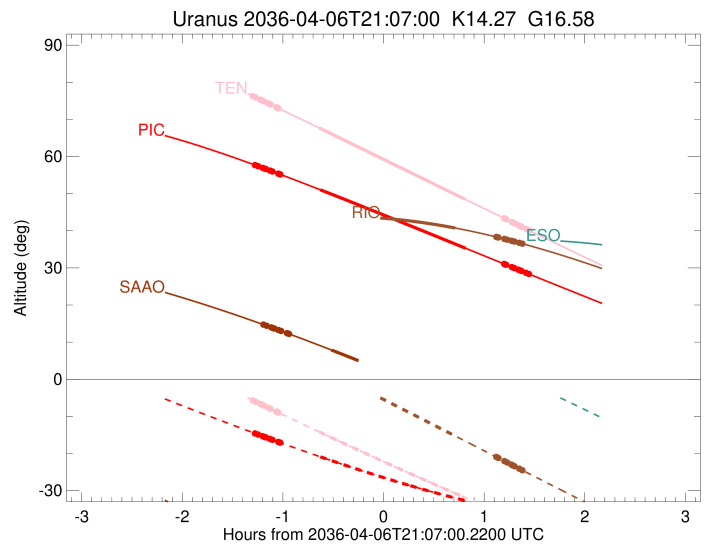
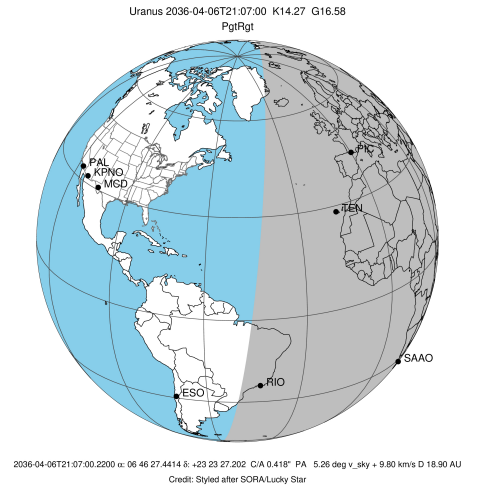
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	APR 06 19:50 - APR 06 22:33	PieRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	APR 06 19:49 - APR 06 22:34	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8		+	+++++	APR 06 21:49 - APR 06 22:30	PneRne
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8	+++++	+		APR 06 19:55 - APR 06 20:35	PinRin
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



```

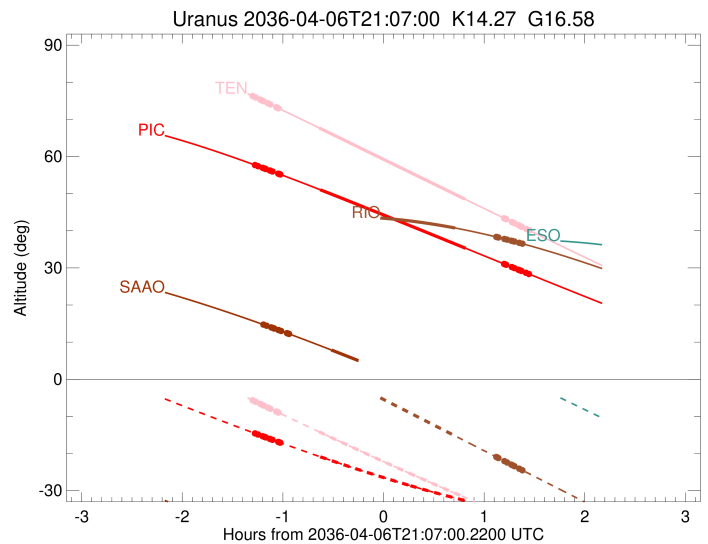
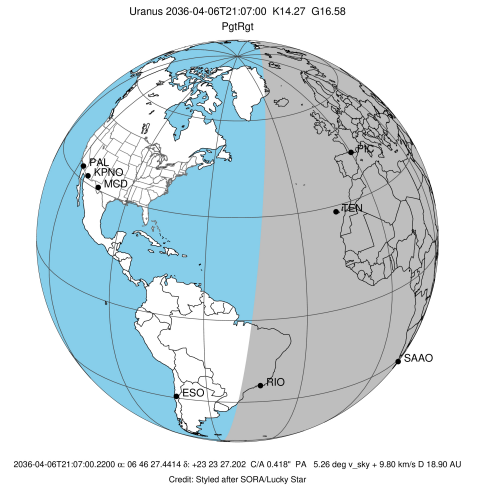
target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-04-06T21:12:50.430
Event type           : PgtRgt
: Ring occs: geocentric, topocentric
Observer code        : PIC
Location             : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)   : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 3379626962550751744
2Mass ID (if available) : 06462744+2323273
ICRS Star Coord at Epoch: 06h 46m 27.44143s +23:23:27.20226s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 14.271
G magnitude           : 16.579
RP magnitude          : 15.867
BP magnitude          : 17.140
DUPflag              : 0
Distance (au)        : 18.897
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 9.80
Sun-Target sep (deg) : 83.51
Sun-Moon sep (deg)   : 44.62
B (ring opening deg) : 65.68
PA of pole (deg)     : 74.66
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.197
C/A sky separation (km) : 2700.2
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-06T19:50:39.876		57.66	-14.63	50985.25	-10.29		
lambda	I	2036-04-06T19:52:13.101		57.40	-14.89	50026.71	-10.28		
delta	I	2036-04-06T19:55:00.974		56.94	-15.36	48300.35	-10.28		
gamma	I	2036-04-06T19:56:06.846		56.76	-15.54	47622.84	-10.29		
eta	I	2036-04-06T19:56:50.276		56.63	-15.66	47176.12	-10.29		
beta	I	2036-04-06T19:59:18.502		56.22	-16.07	45649.97	-10.29		
alpha	I	2036-04-06T20:00:46.259		55.98	-16.31	44746.37	-10.29		
4	I	2036-04-06T20:04:14.715		55.39	-16.88	42612.08	-10.29		
5	I	2036-04-06T20:04:57.111		55.27	-16.99	42168.84	-10.29		
6	I	2036-04-06T20:05:29.920		55.18	-17.08	41846.39	-10.30		
Uranus	I	2036-04-06T20:29:15.520		51.05	-20.88	25174.40		21.43	22.35
Uranus	E	2036-04-06T21:55:59.845		35.28	-32.71	25105.88		-23.42	-24.40
6	E	2036-04-06T22:18:53.866		31.07	-35.11	41833.63	10.52		
5	E	2036-04-06T22:19:39.321		30.93	-35.18	42294.55	10.51		
4	E	2036-04-06T22:20:01.193		30.87	-35.22	42533.32	10.52		
alpha	E	2036-04-06T22:23:27.003		30.24	-35.54	44688.48	10.52		
beta	E	2036-04-06T22:25:00.620		29.95	-35.68	45674.25	10.53		
eta	E	2036-04-06T22:27:23.105		29.52	-35.90	47176.12	10.53		
gamma	E	2036-04-06T22:28:06.199		29.38	-35.96	47630.14	10.54		
delta	E	2036-04-06T22:29:09.800		29.19	-36.06	48300.35	10.53		
lambda	E	2036-04-06T22:31:53.553		28.69	-36.29	50026.71	10.55		
epsilon	E	2036-04-06T22:33:58.769		28.31	-36.47	51347.52	10.55		

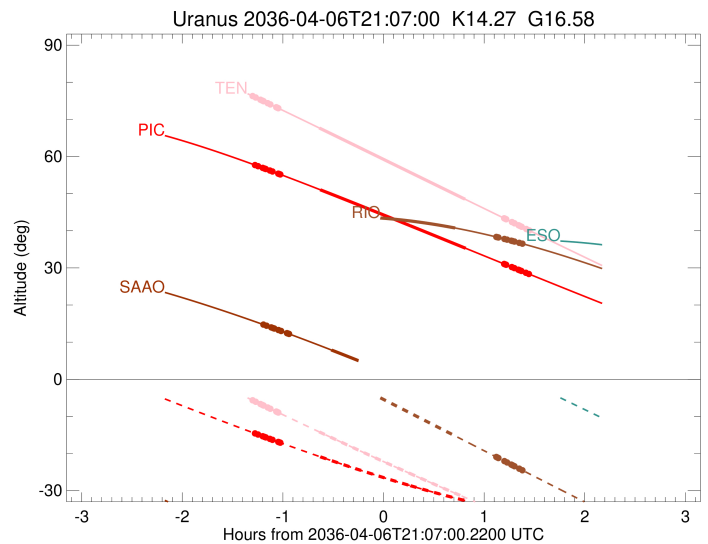
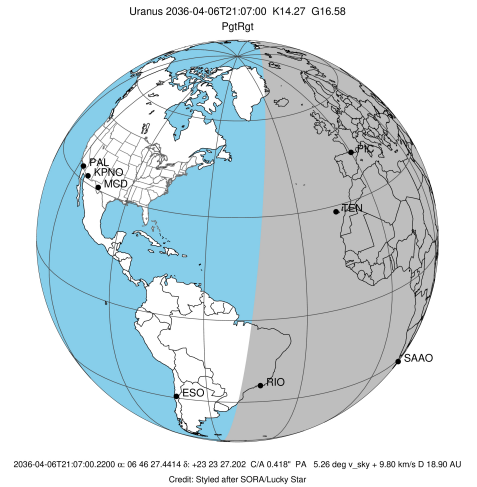
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2036-04-06T21:12:26.430
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : TEN
Location             : Teide Obs./Tenerife
Latitude (deg)       : 28.30050
E. Longitude (deg)   : 343.48909
Altitude (km)        : 2.395
Gaia source ID       : 3379626962550751744
2Mass ID (if available) : 06462744+2323273
ICRS Star Coord at Epoch: 06h 46m 27.44143s +23:23:27.20226s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 14.271
G magnitude           : 16.579
RP magnitude          : 15.867
BP magnitude          : 17.140
DUPflag              : 0
Distance (au)        : 18.897
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : 9.80
Sun-Target sep (deg) : 83.51
Sun-Moon sep (deg)   : 44.77
B (ring opening deg) : 65.68
PA of pole (deg)     : 74.66
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.337
C/A sky separation (km) : 4621.8
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrf93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



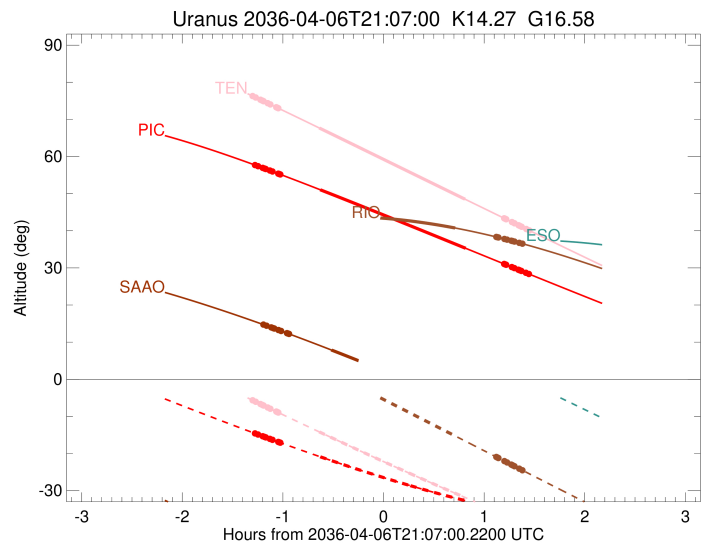
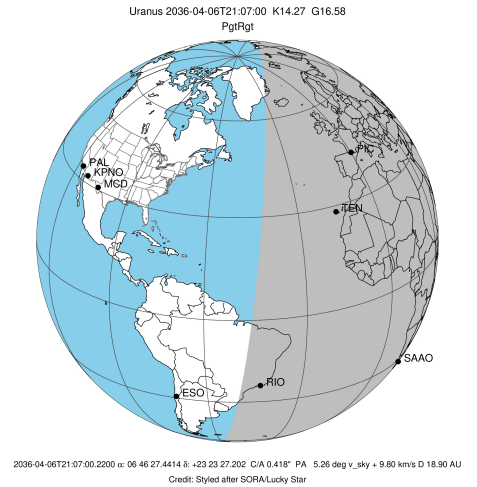
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-06T19:49:13.766		76.24	-5.72	50999.18	-10.14		
lambda	I	2036-04-06T19:50:49.719		75.90	-6.06	50026.71	-10.13		
delta	I	2036-04-06T19:53:40.070		75.29	-6.68	48300.35	-10.13		
gamma	I	2036-04-06T19:54:46.912		75.06	-6.92	47623.01	-10.13		
eta	I	2036-04-06T19:55:31.013		74.90	-7.08	47176.12	-10.13		
beta	I	2036-04-06T19:58:01.431		74.36	-7.62	45650.68	-10.13		
alpha	I	2036-04-06T19:59:30.690		74.04	-7.94	44745.51	-10.13		
4	I	2036-04-06T20:03:02.297		73.28	-8.70	42612.92	-10.13		
5	I	2036-04-06T20:03:45.728		73.13	-8.85	42166.85	-10.13		
6	I	2036-04-06T20:04:18.612		73.01	-8.97	41848.28	-10.13		
Uranus	I	2036-04-06T20:28:43.832		67.69	-14.18	25205.85		20.48	21.36
Uranus	E	2036-04-06T21:55:39.311		48.50	-31.85	25089.94		-23.87	-24.86
6	E	2036-04-06T22:18:54.905		43.38	-36.20	41835.58	10.34		
5	E	2036-04-06T22:19:40.783		43.21	-36.34	42292.05	10.33		
4	E	2036-04-06T22:20:03.330		43.13	-36.41	42534.47	10.34		
alpha	E	2036-04-06T22:23:32.495		42.37	-37.04	44687.83	10.35		
beta	E	2036-04-06T22:25:07.843		42.02	-37.33	45674.87	10.35		
eta	E	2036-04-06T22:27:32.667		41.49	-37.76	47176.12	10.36		
gamma	E	2036-04-06T22:28:16.492		41.33	-37.89	47630.28	10.36		
delta	E	2036-04-06T22:29:21.132		41.09	-38.08	48300.35	10.37		
lambda	E	2036-04-06T22:32:07.569		40.48	-38.57	50026.71	10.38		
epsilon	E	2036-04-06T22:34:16.062		40.01	-38.94	51360.52	10.39		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-04-06T21:09:11.360  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : RIO  
 Location : Rio de Janeiro  
 Latitude (deg) : -22.89506  
 E. Longitude (deg) : 316.77708  
 Altitude (km) : 0.033  
 Gaia source ID : 3379626962550751744  
 2Mass ID (if available) : 06462744+2323273  
 ICRS Star Coord at Epoch: 06h 46m 27.44143s +23:23:27.20226s  
 RUWE (>1.4 is poor) : 1.01  
 K magnitude : 14.271  
 G magnitude : 16.579  
 RP magnitude : 15.867  
 BP magnitude : 17.140  
 DUPflag : 0  
 Distance (au) : 18.897  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 9.80  
 Sun-Target sep (deg) : 83.51  
 Sun-Moon sep (deg) : 44.86  
 B (ring opening deg) : 65.68  
 PA of pole (deg) : 74.66  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.755  
 C/A sky separation (km) : 10343.2  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-06T19:46:10.990		42.16	12.96x	51040.48	-9.95		
lambda	I	2036-04-06T19:47:53.113		42.26	12.58x	50026.71	-9.92		
delta	I	2036-04-06T19:50:47.243		42.44	11.93x	48300.35	-9.91		
gamma	I	2036-04-06T19:51:55.595		42.51	11.67x	47623.52	-9.90		
eta	I	2036-04-06T19:52:40.805		42.55	11.50x	47176.12	-9.89		
beta	I	2036-04-06T19:55:14.766		42.70	10.92x	45652.84	-9.88		
alpha	I	2036-04-06T19:56:46.847		42.78	10.58x	44742.75	-9.86		
4	I	2036-04-06T20:00:23.985		42.96	9.76x	42614.90	-9.84		
5	I	2036-04-06T20:01:09.636		43.00	9.59x	42161.86	-9.83		
6	I	2036-04-06T20:01:42.231		43.02	9.47x	41853.67	-9.83		
Uranus	I	2036-04-06T20:28:03.977		43.82	3.48x	25312.78		16.93	17.68
Uranus	E	2036-04-06T21:49:43.662		40.75	-15.27	25074.94		-24.28	-25.29
6	E	2036-04-06T22:14:13.611		38.34	-20.92	41841.76	9.92		
5	E	2036-04-06T22:15:00.039		38.26	-21.10	42283.34	9.91		
4	E	2036-04-06T22:15:24.635		38.21	-21.19	42538.63	9.93		
alpha	E	2036-04-06T22:19:01.490		37.81	-22.02	44686.16	9.96		
beta	E	2036-04-06T22:20:40.933		37.61	-22.41	45676.70	9.97		
eta	E	2036-04-06T22:23:11.025		37.32	-22.98	47176.12	9.99		
gamma	E	2036-04-06T22:23:56.501		37.23	-23.16	47630.69	10.00		
delta	E	2036-04-06T22:25:03.445		37.10	-23.42	48300.35	10.01		
lambda	E	2036-04-06T22:27:55.770		36.75	-24.08	50026.71	10.03		
epsilon	E	2036-04-06T22:30:12.631		36.47	-24.60	51400.26	10.06		

target : Uranus  
 target radius (km) : 25559.00  
 C/A epoch : 2036-04-06T21:16:36.880  
 Event type : PgtRgt  
 : Uranus occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Observer code : SAAO  
 Location : So. Afr. Astro. Obs. (Sutherland)  
 Latitude (deg) : -32.37953  
 E. Longitude (deg) : 20.81070  
 Altitude (km) : 1.768  
 Gaia source ID : 3379626962550751744  
 2Mass ID (if available) : 06462744+2323273  
 ICRS Star Coord at Epoch: 06h 46m 27.44143s +23:23:27.20226s  
 RUWE (>1.4 is poor) : 1.01  
 K magnitude : 14.271  
 G magnitude : 16.579  
 RP magnitude : 15.867  
 BP magnitude : 17.140  
 DUPflag : 0  
 Distance (au) : 18.897  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : 9.80  
 Sun-Target sep (deg) : 83.51  
 Sun-Moon sep (deg) : 43.92  
 B (ring opening deg) : 65.68  
 PA of pole (deg) : 74.66  
 Pole direction: RA (deg): 257.31100  
 Dec (deg): -15.17500  
 C/A sky separation (") : 0.663  
 C/A sky separation (km) : 9080.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk  
 URKALLvl.spk  
 ura111.bsp  
 IAU\_URANUS\_for\_RINGFIT.tpc  
 vgr2.ura111.bsp  
 ura161.bsp  
 vgr2.ura161.bsp  
 peph.ura160.bsp  
 earthstns\_itr93\_040916.bsp  
 earth\_720101\_070426.bpc  
 earth\_200101\_990628\_predict.bpc  
 pg3f0000r.bsp  
 pg490000r.bsp  
 naif0012.tls  
 earth\_flat\_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-06T19:55:37.200		14.69	-44.41	51035.12	-10.21		
lambda	I	2036-04-06T19:57:16.157		14.42	-44.73	50026.71	-10.19		
delta	I	2036-04-06T20:00:05.665		13.96	-45.27	48300.35	-10.18		
gamma	I	2036-04-06T20:01:12.167		13.78	-45.48	47623.45	-10.18		
eta	I	2036-04-06T20:01:56.127		13.66	-45.62	47176.12	-10.17		
beta	I	2036-04-06T20:04:25.803		13.25	-46.09	45652.53	-10.17		
alpha	I	2036-04-06T20:05:55.170		13.01	-46.38	44743.18	-10.16		
4	I	2036-04-06T20:09:25.939		12.42	-47.04	42614.65	-10.15		
5	I	2036-04-06T20:10:10.080		12.30	-47.17	42162.53	-10.14		
6	I	2036-04-06T20:10:41.856		12.21	-47.27	41852.87	-10.14		
Uranus	I	2036-04-06T20:35:55.430		7.88	-51.83	25292.18		17.66	18.44
Uranus	E	2036-04-06T21:56:33.844		-7.13x	-62.88	25073.40		-24.32	-25.33
6	E	2036-04-06T22:19:47.928		-11.71x	-64.35	41840.16	10.42		
5	E	2036-04-06T22:20:32.492		-11.86x	-64.38	42285.70	10.41		
4	E	2036-04-06T22:20:55.619		-11.94x	-64.40	42537.48	10.42		
alpha	E	2036-04-06T22:24:22.361		-12.62x	-64.51	44686.54	10.45		
beta	E	2036-04-06T22:25:57.016		-12.94x	-64.56	45676.25	10.47		
eta	E	2036-04-06T22:28:20.089		-13.41x	-64.62	47176.12	10.48		
gamma	E	2036-04-06T22:29:03.422		-13.56x	-64.64	47630.59	10.49		
delta	E	2036-04-06T22:30:07.241		-13.77x	-64.66	48300.35	10.50		
lambda	E	2036-04-06T22:32:51.522		-14.32x	-64.70	50026.71	10.52		
epsilon	E	2036-04-06T22:35:01.054		-14.75x	-64.73	51390.12	10.55		